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Utilization and compliance of weekly iron and folic acid supplementation programme among school dropout adolescent girls in rural areas of Odisha, India

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Abstract

Background: Iron deficiency anemia is a major public health problem occurring mostly in adolescent girls due to its intergenerational impact. Weekly Iron and Folic Acid Supplementation programme was implemented under Ministry of Women and Child Development to reach all adolescents.

Objective: To find the anemic status of out-of-school adolescent girls, their utilization and compliance of Weekly Iron and Folic Acid Supplementation programme.

Methods: A cross-sectional study was carried out among ninety-six school dropout adolescent girls in five villages in Khordha district. A snow-ball sampling was used to screen the school dropout adolescent girls and a consecutive sampling technique was used to recruit subjects in the study. Anemic status was checked with True Hb Hemometer. A self-constructed structured questionnaire was used to assess the utilization status, compliance and non-compliance to WIFS programme.

Results: Majority of the subjects were found suffering from mild to moderate anemia. Nearly half of the subjects were utilizing the WIFS programme but only 47% were compliant. Unavailability of Iron tablets was observed to be major cause of non-compliance. It was also found that adolescents who were compliance to IFA tablets were having better anemia status ($p < 0.05$).

Conclusion: Achievement of the implemented programme should be assessed through periodic meetings and feedback with health workers. Unavailability of IFA tablets was the major cause of non-compliance. There is need of proper health education to communicate benefits of implemented health programmes.

Keywords: Out-of-school adolescent girls, WIFS programme, anemic status

Introduction

Adolescence (ages between 10-19 years) is a period of rapid growth and development as there is transition from childhood to adulthood [1]. There are about 1.2 billion adolescents worldwide [2]. They constitute 18% of the global population. It indicates every sixth person is an adolescent [3]. Anemia is the major public health problem in adolescent age group. There is an increase in iron requirement for the growth and in adolescent girls loss of iron occurs during their menstrual period which may lead to the most common type of anemia i.e. iron deficiency anemia [4]. In India, about 54% of adolescent girls are suffering from anemia. The prevalence of anemia among non-pregnant women in India and Odisha is 53.2% and 51.2% respectively [5].

Anemia may not only harm the growth, cognitive and work performance of adolescents but also have irreversible negative effects throughout the reproductive years of life like high perinatal mortality, high maternal mortality ratio due to high maternal risk of haemorrhage and sepsis during childbirth and consequently leading to low birth weight babies. It is evident that if a satisfactory level of iron is achieved in adolescent age then anemia can be easily controlled during pregnancy. In rural areas, adolescent girls belongs to disadvantaged section of society thus putting their health at risk for adolescent anemia. Thus, they are in need of iron supplementation [6].

The Government of India universalize the Weekly Iron and Folic Acid Supplementation (WIFS) programme in 2013 ensuring 'continuum of care' through different life stages. WIFS programme is planned to break the intergenerational cycle of anemia by implementing it in

both rural and urban areas [7]. Strategy for implementation of WIFS includes 100mg elemental iron and 500 mcg folic acid round the year, Biannual deworming with albendazole 400 mg every six months and Nutrition Health Education to school going (6th to 12th class) girls and boys and out-of-school adolescent girls [8].

Many studies are conducted among school-going adolescents to know the compliance to the WIFS programme but there is lack of information about utilization and compliance of the programme among out-of-school adolescent girls. So, the primary objective of the study aimed to assess anemic status among school dropout adolescent girls, their utilization and compliance of weekly iron and folic acid supplementation programme followed by secondary objective to find association of utilization and compliance to WIFS programme with anemic status.

Methodology

Study design and period

A community based cross-sectional study was conducted

from November 2019 to January 2020.

Study area

The present study was conducted in three villages under Andharua Panchayat which have approx. 10,000 total population and two hamlet villages. Andharua Panchayat comes under the CHC, Mendhasala in the Khordha District of Odisha.

Study population

All the school dropout adolescent girls aged 10-19 years who were present at the time of study, were included in the study after taking informed assent and consent.

Sampling technique and sample size

A snowball sampling technique was used to screen school dropout adolescent girls in the villages. A total of 96 school dropout adolescent girls participated in the study as shown in Figure 1.

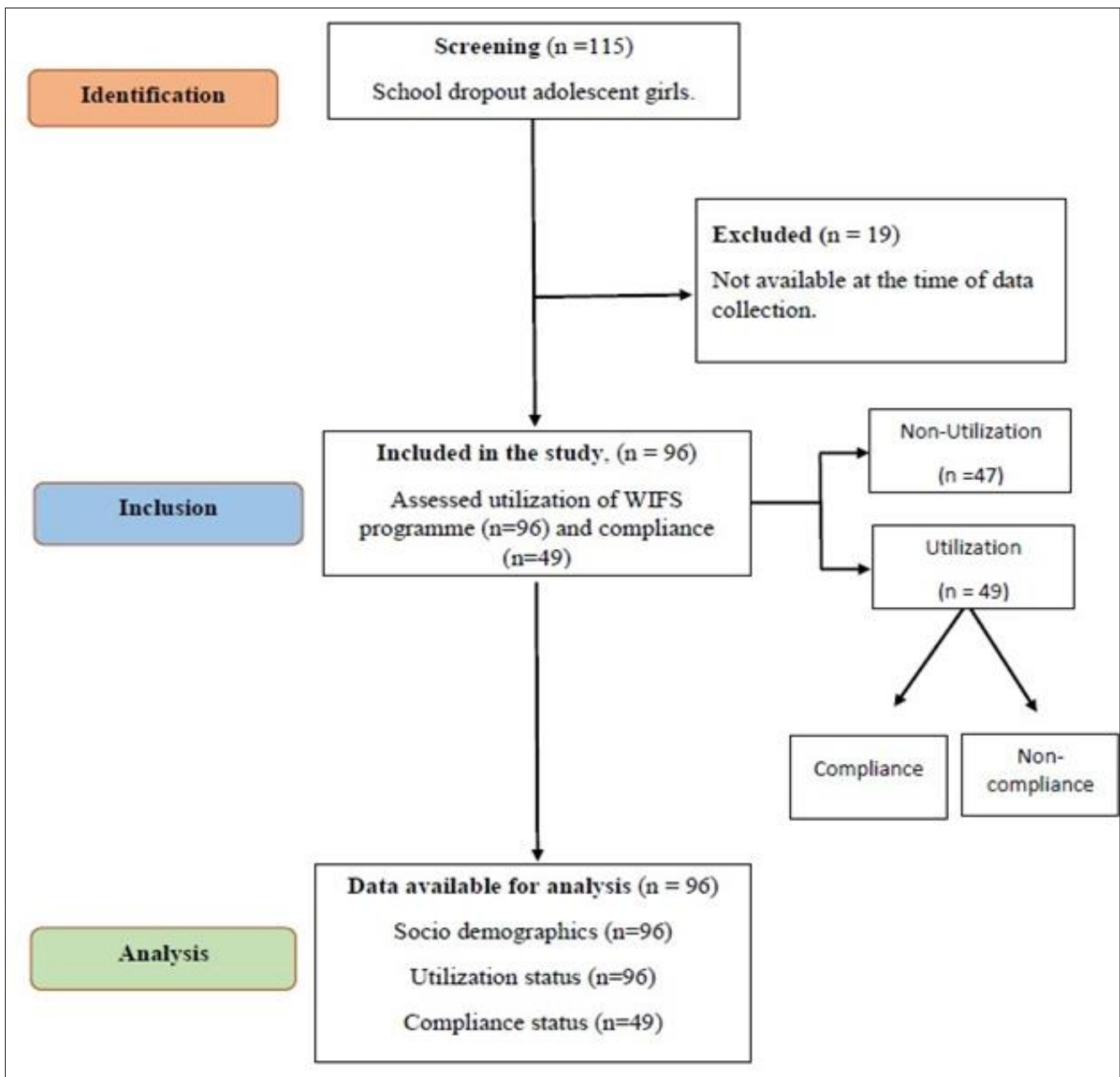


Fig 1: Strobe flow diagram

Data collection equipment and method

Hemoglobin was checked using True Hb Hemometer. To check the hemoglobin level, prior appointment was taken from the subjects and their parents. On the day of assessment, finger was pricked with a lancet pen after wiping the finger with a spirited swab for hygiene and safety measures, the first drop of blood was wiped with dry cotton and the next sample drop of blood had been put on hemo-strip inserted into the hemometer. Finally, the hemoglobin level was read and recorded.

A structured questionnaire was developed to collect data pertaining to socio-demographic characteristic, utilization of WIFS programme, compliance and non-compliance of WIFS. It was validated by 7 experts from the fields of community health nursing and CM FM department. English version of the questionnaire was translated into the local language (Odia). Language validity was established by language expert by back translating the Odia tool into English. The data regarding utilization and compliance of WIFS programme was assessed by structured questionnaire. Those who were utilizing the WIFS programme were further asked about the compliance to it. In this study adolescent consuming one IFA tablet / week regularly for one month period were considered as compliant to WIFS programme. Adolescent found non-compliant were further enquire about the reason for non-compliance.

Data processing and analysis

Data was checked during and after data collection for completeness and consistency and was coded and entered into an excel spreadsheet.

Data were analyzed using descriptive and inferential statistics. Non-parametric test i.e. chi-square was used to find the association of utilization and compliance to WIFS programme with anemic status of school dropout adolescent girls. Variables having p-value of less than or equal to 0.05 was considered as statistically significant.

Ethical consideration

Ethical approval was taken from the Institutional Ethical Committee of AIIMS Bhubaneswar, Odisha and administrative approval was taken from Principal, College of Nursing, AIIMS Bhubaneswar and medical officer incharge of Community health centre, Mendhsala, Odisha. Written informed assent was taken from school dropout adolescent girls of age group 10 to less than 18 years and consent was obtained from school dropout adolescent girls of age 18 and above regarding their willingness to participate in the research project. Confidentiality was maintained throughout the study.

Results**Socio-demographic characteristics**

In the present study, total 96 subjects participated and the mean age was 16.93 ± 0.17 years. Most of the subjects were in the age group 15-19 years. Maximum have consumed IFA tablets during school time. 52% had completed education upto primary level. 49% had a dropout period of more than two years.

Anemic status

From the total 96 subjects, majority of them were suffering from mild (33.1%), and moderate anemia (53.1%), 7.3% of them were suffering from severe anemia had hemoglobin level less than 7 g/dl and only 6.3% of them were non-anemic had hemoglobin level more than 12 g/dl.

Utilization status

Of the total 96 subjects, 49 subjects were utilizing the WIFS programme. Subjects taken minimum one tablet through anganwadi centres in a month. Among those who were utilizing WIFS programme, 78% of them had taken biannual dose of albendazole in last one year. 73.5% received health education on dietary practices, 38.7% on hygiene practices and only 34.6% on deworming practices by Anganwadi workers.

Compliance monitoring

Out of 49 subjects who were utilizing the services, only 23 (47%) of them were compliant and 26 (53%) subjects were non-compliant to WIFS programme. It shows 47% of subjects were compliant and consumed IFA tablets 4 times in a month. Among those who were non-compliant, 61.5% consumed IFA tablets 3 times, 27% consumed two times and 11.5% consumed IFA tablets only once in a month. Those who have consumed the IFA tablets 40 (81.6%) of them feel well after taking, 6 (12.2%) feels okay and 3 (6.2%) feel the IFA tablets were not well.

Causes of Non- Compliance

Among 26 non-compliant subjects, majority of them 15 (57.7%) were non-compliant to WIFS programme due to the unavailability of the IFA tablets at the Anganwadi centres. Some causes which seems to be due to lack of proper health education were confusion with which fluid IFA tablet to be taken 1(3.8%), not knowing the correct time 2 (7.7%) and effect of taking IFA tablets 2 (7.7%). Bad taste of the IFA tablets 1(3.8%), Carelessness 2 (7.7%) and to avoid side effects 3 (11.6%) were also the causes of non-compliance as shown in Figure 2.

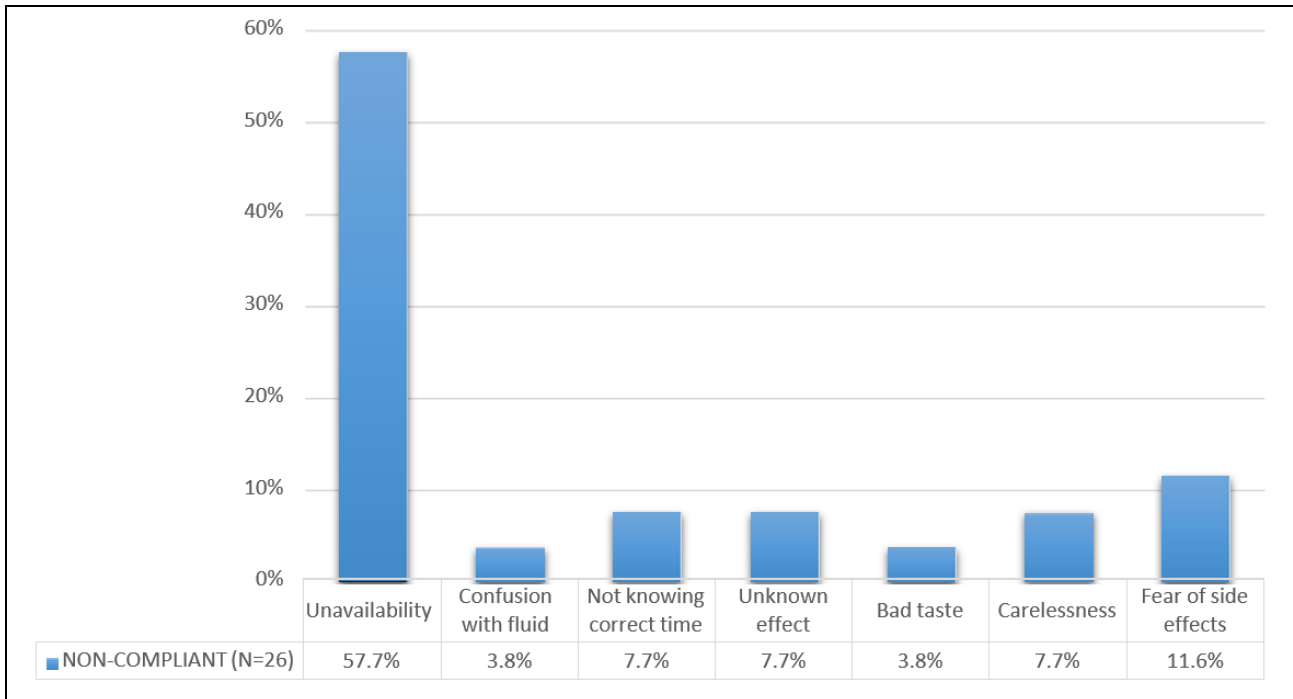


Fig 2: Causes of non-compliance among school dropout adolescent girls utilizing WIFS programme

Utilization and anemic status

Of the total 96 subjects, 49 subjects were utilizing the WIFS programme. Of them, 04 (08.0%) were non-anemic, 22 (45.0%) were suffering from mild anemia, 22 (45.0%) and 01 (02.0%) were suffering moderate and severe anemia respectively. Among 47 subjects who were not utilizing the

WIFS programme 02 (04.3%) were non-anemic, 10 (21.3%) were suffering from mild anemia whereas 29 (61.7%) and 06 (12.7%) were suffering from moderate and severe anemia respectively. Utilization of WIFS programme found to be significantly associated with anemic status as shown in Table 1.

Table 1: Association of utilization of WIFS programme with anemic status

Anemic status	Utilization of WIFS Programme among school dropout adolescent girls		
	Utilizing	Not utilizing	P value
	f (%)	f (%)	
Non-anemic (>12 g/dl)	04 (08.0)	02 (04.3)	0.02*
Mild anemia (10-11.9 g/dl)	22 (45.0)	10 (21.3)	
Moderate anemia (7- 9.9 g/dl)	22 (45.0)	29 (61.7)	
Severe anemia (less than 7 g/dl)	01 (02.0)	06 (12.7)	

*Significant at ≤0.05 level of significance

Compliance and anemic status

Among 49 subjects utilizing the WIFS programme, 23 subjects were compliant. Of them, 03 (06.4%) were non-anemic. Most of them was having mild anemia (10-11.9 g/dl), few were moderately anemic (7-9.9 g/dl) and none of them was severely anemic (less than 7 g/dl) whereas from 26 subjects who were non-compliant to the WIFS

programme, only 01 (03.9%) was non-anemic, majority of them were having 19 (73.0%) moderate anemia, some of them were mildly anemic 5 (19.2%) and 01 (03.9%) was severely anemic. Therefore, there is an association of compliance to WIFS programme with anemic status as shown in Table 2.

Table 2: Association of compliance to WIFS programme with anemic status n = 49

Anemic status	Compliance to WIFS Programme among school dropout adolescent girls		
	Compliant	Non-compliant	P value
	f (%)	f (%)	
Non-anemic (>12g/dl)	03 (13.0)	01 (03.9)	0.01*
Mild anemia (10-11.9 g/dl)	17 (74.0)	05 (19.2)	
Moderate anemia (7- 9.9 Op)	03 (13.0)	19 (73.0)	
Severe anemia (less than 7 g/dl)	00 (00.0)	01 (03.9)	

*Significant at ,0.05 level of significance

Discussion

Anemia has become the leading health problem among adolescent girls. Identification of anemic status among out-of-school adolescent girls will facilitate to know the

utilization status of WIFS Programme of this marginalised section of society, programme achievement and may improve comprehensive health status. In this study, anemic status of school dropout adolescent

girls was assessed using digital Hemometer. Further utilization and compliance to WIFS programme was seen to identify effective implementation of the programme. Through hemoglobin estimation using True Hb Hemometer, study presents that majority of the subjects were suffering from mild to moderate anemia. These findings were somewhat similar to a study conducted among non-school-going adolescent girls in three districts of Orissa^[9, 10]. Supplementation of IFA tablet is more essential to this undervalued group of society to decrease the effect of intergenerational anemia.

In the present study, majority of the subjects had school dropout period of more than two years and 51% (n=49) subjects were utilising the WIFS programme. This finding is contrary to three other studies conducted in rural Pondicherry and Kanchipuram where utilization of WIFS programme was 97.1%, 85.8% and 83.7%^[11, 12, 13]. These studies were conducted among school going adolescents where teachers were present for IFA supplementation under direct supervision whereas anganwadi workers are responsible for providing IFA supplementation to out-of-school adolescent girls which need supportive supervision and monitoring. It was seen during study that many school dropout adolescent girls were going for labour work and some are living far away from Anganwadi centres. So, if some form of incentives are provided like Hb test or take home ration for Saturday sessions then they may come to Anganwadi centres for IFA supplementation. Study also shows that there is a significant association of utilization of WIFS with anemic status. Subjects who were utilizing the programme found to be less anemic. It is important to review the progress of implemented programmes through conducting meeting and showing feedback of the findings. In our study, it was found that health education was mainly given on dietary practices as compared to hygiene and deworming practices by Anganwadi workers. Effective health education may improve community awareness and perception of anemia as a prevalent health issue.

School dropout adolescent girls who were utilizing the WIFS programme, among them only 47% (n=23) were found to be compliant. Similar results were showed with compliance 15% by a study done in Kerala among school students^[14] but sample size was different in both studies. While this is in contrast with a previous study done in West Bengal showing 67.7% students were compliant^[7]. Present study shows significant association of anemic status with compliance to WIFS programme as those subjects who were compliant to WIFS programme most of them were normal and none of them was severely anemic. This emphasizes the role of frontline workers.

It was distressing to know that majority 53% (n=26) were non-compliant. Among various causes of non-compliance, unavailability of IFA tablets 57.7% found to be the major cause. Similar issue of stock out and irregular supply was reflected in the previous studies conducted by G.H.MK *et al.* and Vemuri JLN^[13, 15]. This is a serious issue and must be improved through political involvement and effective logistic management/tracking of IFA tablets. Bad taste of the tablets was also stated as a cause of non-compliance supported by a study conducted in rural Kanchipuram¹³. Some other cause reported were to avoid side effects like black stool, constipation coincides with the study conducted in West Bengal^[7] whereas causes like carelessness, not knowing correct time, confusion with fluid and unknown

effects of IFA tablets were also enlisted which is supported by a study conducted by Sh Priya *et al.* in which ¼ th of the school students were consuming IFA tablets in an empty stomach^[11]. Through the findings, health education seems to be essential, as it is known if IFA tablets are taken with a meal, snack or water can avoid gastric side effects. Community leaders should focus on creating awareness regarding the implemented programmes as a small step may bring big change.

Conclusion

WIFS is an important flagship programme for improvement of anemic status among adolescents. Unavailability was major issue for non-compliance. Regular supervision and monitoring may improve utilization and compliance of WIFS programme and further it will break the intergenerational cycle of anemia. Thus, for reducing the prevalence of anemia strict implementation of WIFS programme and public health education is required.

Further studies can be done with more sample and data collection period. Pre and post hemoglobin can be checked to assess effectiveness of IFA supplementation and some intervention can be given to those with low hemoglobin level.

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